

# **Exhibit 23**

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LJAugustine@townsend.com

October 10, 2007

***VIA ELECTRONIC MAIL AND U.S. MAIL***

Harry F. Doscher  
Morgan, Lewis & Bockius LLP  
2 Palo Alto Square  
3000 El Camino Real, Suite 700  
Palo Alto, CA 94306

Re: Alpha & Omega Semiconductor, Ltd. v. Fairchild Semiconductor Corp.,  
Case No. C 07-2638 JSW (consolidated with Case No. C-07-2664 JSW)  
Our File No.: 18865P-021600

Dear Mr. Doscher:

I am writing to respond to your October 5, 2007 letter to Eric Jacobs regarding Fairchild's discovery requests.

Fairchild's objections to AOS's definition of "Accused Fairchild Devices" are appropriate and proper, contrary to your assertions. First, your assertion that Fairchild has objected on the basis of this definition to "all of AOS's discovery requests" is plainly wrong. Fairchild has not objected on this basis to discovery requests that do not use the term "Accused Fairchild Devices," and has not even objected to every discovery request that uses that term -- for example, Fairchild's responses to AOS's Interrogatories No. 12 and 13. Instead, Fairchild has objected only where the use of the term "Accused Fairchild Devices" renders the particular discovery request "vague and ambiguous, overbroad, unduly burdensome and oppressive, not relevant to the subject matter of the present action, not relevant to the claim or defense of any party, and [] not reasonably calculated to lead to the discovery of admissible evidence."

Your characterization of AOS's definition as being "well understood" and "a model of precision and clarity" in comparison to Fairchild's definition of "accused product(s)" has no merit. Fairchild limited its definition to AOS's systems or products containing the easily

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understood "trench design power MOSFETs or IGBTs." By contrast, AOS's definition of "Fairchild's Accused Products" refers to "power MOSFET-based" devices. The term "trench design power MOSFETs or IGBTs" is well known in the industry as a means of describing the design of the gate in these devices. However, AOS's use of the term "power MOSFET-based devices" has no generally accepted meaning. Whether a device is "power MOSFET-based" is meaningless since many products include power MOSFETs, but may not be "based" on them.

Your assertions that AOS's definition directly relates to the subject matter of the patents in suit and that discovery regarding devices covered by that definition is "not only calculated to lead to the discovery of admissible evidence, it is directly relevant to AOS's claims that those very devices infringe its asserted patents and to Fairchild's defenses against those claims . . ." are also wrong. Your assertions assume that every power MOSFET device and every device that incorporates a power MOSFET device is encompassed in the subject matter of this lawsuit. Only those devices that exhibit characteristics of the patent claims at issue, however, are the subject matter of this lawsuit. AOS in its Disclosure of Asserted Claims and Preliminary Infringement Contentions ("PICs") has identified only eight specific Fairchild discrete power MOSFET devices which it accuses of infringement. AOS has provided no reasons why it believes any devices other than those eight accused products are relevant to the claims or defenses of any party or that other devices encompassed within AOS's definition are reasonably similar to the eight devices accused by AOS in its PICs such that discovery would be appropriate for those devices. If you are able to provide such information, please provide it to us.

Furthermore, AOS's definition is overbroad, unduly burdensome and oppressive. As mentioned, AOS in its PICs has identified only eight specific Fairchild discrete power MOSFET devices which it accuses of infringement, yet AOS's definition includes "any power MOSFET-based device made, used, sold, offered for sale, or imported by Fairchild, including without limitation, the devices identified on Fairchild's web site as Power Modules, Switches, Power Controllers, Power Drivers, Transistors, TRIACs, Voltage Regulators, Application based Products (Audio, Video, Motor Drivers [sic] and USB), Interface, Filters, and Temperature Management." To the extent that Fairchild understands the definition, it would seemingly encompass an extraordinary number of products throughout Fairchild's product lines where AOS's PICs included an accusation of only eight specific devices and provided an insufficient basis for even that accusation.

Fairchild's limiting its responses to AOS's Interrogatory Nos. 1-5, 7 and 12-13 to the eight specific Fairchild devices which were identified in AOS's preliminary infringement contentions served on August 31, 2007, is appropriate and proper. Contrary to your assertions, nothing in the Federal or Local Rules requires Fairchild to respond to discovery requests that are directed to products not accused of infringement nor reasonably similar to such products. AOS has provided no reasons why it believes any devices other than those eight accused products are relevant to the claims or defenses of any party or that other devices encompassed within AOS's definition are reasonably similar to the eight devices accused by AOS in its PICs such that

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discovery would be appropriate for those devices. If you are able to provide such information, please provide it to us.

With respect to Interrogatory No. 6, contrary to your assertion, the Patent Local Rules do not require Fairchild to respond to a discovery request seeking its non-infringement positions before AOS serves PICs that comply with the Patent Local Rules. *Townshend Intellectual Property, L.L.C. v. Broadcom Corp.*, 2007 WL 2462152, \*3 (slip copy) (N.D. Cal. Aug. 29, 2007) (denying plaintiff's motion to compel responses to discovery requests seeking defendant's non-infringement position because, "the overall structure of the [Patent Local] Rules, as well as common sense, supports [defendant's] argument that it would be fundamentally unfair to require a patent defendant to set out and support its non-infringement case before the plaintiff has complied with its obligation to serve Preliminary Infringement Contentions."). AOS recently agreed that it would amend its PICs on or before October 19 in response to Fairchild's contention that AOS's PICs were deficient. Furthermore, Patent Local Rule 2-5(a) explicitly exempts a party from responding to discovery requests seeking "to elicit a party's claim construction position." Fairchild's non-infringement position is predicated on its claim construction position, and therefore it is improper to seek Fairchild's non-infringement position until the parties have exchanged their claim construction positions. See *Caliper Technologies Corp. v. Molecular Devices Corp.*, 213 F.R.D. 555, 557-58 (N.D. Cal. 2003) (Court took no action where defendant did not respond to discovery requests seeking its non-infringement until after claim construction positions were exchanged).

With respect to AOS's assertions regarding Fairchild's responses to Interrogatories No. 8, 17 and 21, Fairchild has responded in good faith to the extent permitted by its ongoing investigation. Fairchild will amend and/or supplement these responses at an appropriate time.

With respect to AOS's Interrogatory No. 11, in contrast to your assertions, Fairchild fully responded as of the date of its response. Fairchild further explained that it not aware of any such person because it does not keep separate records of previous or subsequent employment of its employees. Since serving its response, Fairchild has become aware of one individual who left Fairchild's employment to work for AOS, and Fairchild will amend its response accordingly.

With respect to AOS's Interrogatory No. 12, Fairchild's response identified the three most knowledgeable persons with respect to the listed topics as a whole. Interrogatory No. 12 did not make clear that it sought the three most knowledgeable persons for each topic. In light of your letter requesting such information, Fairchild will amend and/or supplement its response to Interrogatory No. 12 to identify three most knowledgeable persons with respect to each of the topics for which the parties have not stipulated to defer discovery.

With respect to Interrogatory No. 8, your request that Fairchild supplement its responses is both premature and wrong. The parties agreed to a stipulation that discovery would be deferred with respect to Interrogatory No. 8 "except to the extent it relates to the importation or sale of accused products by any entity other than Fairchild." None of the information you have

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requested Fairchild to supplement is encompassed within that exception. Furthermore, in contrast to your assertions, this interrogatory is not reasonably limited in time. This interrogatory seeks certain sales information for the time period June 16, 1998 to the present. Pursuant to 35 U.S.C. § 286, however, "no recovery shall be had for any infringement committed more than six years prior to the filing of the complaint . . . ." AOS filed its original complaint in this action on May 17, 2007, and therefore can recover damages at least no further back than May 17, 2001. Furthermore, 35 U.S.C. § 287 provides that with respect to any patented article that is not marked with notice of the patent, the patentee may not recover "except on proof that that infringer was notified of the infringement" and only for "infringement occurring after such notice." AOS's U.S. Patent No. 5,767,567 ("the '567 patent") includes apparatus claims and therefore at least damages with respect to the '567 patent are subject to the marking requirements of section 287. AOS has not established that it marked its products or that Fairchild had notice of the '567 patent any earlier than August 2005, and therefore is not entitled to damages discovery with respect to the '567 patent prior to such date. If you have contrary information, please let us know.

Fairchild's limiting its responses to AOS's Requests for Production Nos. 10, 12-17, 19-26, 28, 30-31, 36-37, 39-46, 48-49, 55 and 115 to the eight specific Fairchild devices which were identified in AOS's PICs served on August 31, 2007, is appropriate and proper for the same reasons described above with respect to AOS's Interrogatory Nos. 1-5, 7 and 12-13.

With respect to AOS's Request for Production No. 4, contrary to your assertions, Fairchild's objections are appropriate and proper. With respect to Fairchild's objection on the basis of privilege, Fairchild's investigation is ongoing, but Fairchild believes certain materials may be protected by the attorney-client privilege and/or the work-product doctrine. Fairchild is not yet required to provide a privilege log with the information you listed. A privilege log containing appropriate information will be provided at an appropriate time. Contrary to your assertion that AOS is "entitled to discovery of all documents and things within the possession, custody or control of Fairchild that relate to the AOS Asserted Patents," AOS is not entitled to information that is overbroad, unduly burdensome or oppressive, or that is otherwise objectionable. The overbreadth, undue burden and oppression of AOS's request for "all documents and things relating to AOS Asserted Patents" is underscored by your assertion that this request is related to discovery of "infringement, inducement of infringement, contributory infringement, commercial success and/or validity of the claimed invention," which encompasses virtually every aspect of AOS's case. Indeed, this request appears to cover every document requested by AOS in its other requests for documents for its offensive case. The Federal Rules require that each document request be "described with reasonable particularity," Fed. R. Civ. P. 34 (b), and this request plainly fails to meet that standard. To the extent that this request seeks "any expired patents, any continuations, continuations-in-part, divisionals, reissues, reexaminations, or counterparts related thereto, and any related foreign patents and patent applications, including any underlying patent applications," such documents are publicly available and equally available to AOS.

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AOS's Request for Production No. 5 is improper for all the reasons described above with respect to AOS's Interrogatory No. 6. Similar considerations apply to AOS's assertions regarding Fairchild's objections and response to AOS's Request for Production No. 11. AOS is seeking a fully functional sample of each "Accused Fairchild Device." Because of the overbreadth of AOS's definition of "Accused Fairchild Device," AOS is requesting that Fairchild provide one of each of many thousands of different parts, yet AOS did not accuse those Fairchild parts in its PICs nor did AOS provide any reasons why it believes any devices other than those eight accused products are relevant to the claims or defenses of any party or that other devices encompassed within AOS's definition are reasonably similar to the eight devices accused by AOS in its PICs such that discovery would be appropriate for those devices. Even if it had, the cost to produce those parts is not mere "pennies," as you contend. Besides the cost of each individual part, the logistical costs of collecting, tracking and producing many thousands of parts is prohibitively expensive. Fairchild has proposed on several occasions that the parties agree on a list of representative parts for discovery and trial as a means of reducing the litigation costs. Thus far, AOS has refused this proposal.

With respect to AOS's Requests for Production Nos. 28, 29, 34, and 44-46, Fairchild intends to abide by the terms of the stipulation between the parties regarding deferral of certain discovery (the "Stipulation"). Fairchild expects AOS to likewise fully abide by the terms of the Stipulation. Subject to the limitations identified in the Stipulation and the objections and limitations identified in Fairchild's responses to AOS's Requests for Production Nos. 28, 29, 34, 44 and 46 and without waiving them, Fairchild will produce non-privileged, responsive documents that are within Fairchild's possession, custody or control and that can be located after a reasonably diligent good faith search. With respect to AOS's Request for Production No. 45, AOS's request for "[a]ll documents relating to *any requirements* of your customers, both in the United States and worldwide . . ." (emphasis added) is overbroad, unduly burdensome and oppressive and seeks information that is not relevant to the subject matter of the pending action or claims or defenses of any party, and not reasonably calculated to lead to the discovery of admissible evidence. Subject to the limitations identified in the Stipulation and the objections and limitations identified in Fairchild's responses to AOS's Request for Production No. 45 and without waiving them, Fairchild will produce non-privileged, responsive documents that are within Fairchild's possession, custody or control and that can be located after a reasonably diligent good faith search relating to the identity of foreign customers.

With respect to AOS's Request for Production Nos. 76 and 82, Fairchild's objections are appropriate and proper. With respect to Fairchild's objection on the basis of privilege, Fairchild's investigation is ongoing, but Fairchild believes certain materials may be protected by the attorney-client privilege and/or the work-product doctrine. Fairchild is not yet required to provide a privilege log with the items you have listed. A privilege log containing appropriate information will be provided at an appropriate time. With respect to Fairchild's objections on the basis that the requests are overbroad, unduly burdensome and oppressive, Request for Production No. 76 seeks production of personnel files for "any employee who was involved in the development of the claimed invention in any Fairchild Asserted Patent." To the extent this



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request seeks personnel files beyond the employees directly involved in the conception and reduction to practice of Fairchild's claimed inventions, it is overbroad, unduly burdensome and oppressive, and seeks information that is not relevant to the subject matter of the pending action or claims or defenses of any party, and not reasonably calculated to lead to the discovery of admissible evidence. If you intend that this request apply only to employees directly involved in the conception and reduction to practice of Fairchild's claimed inventions, please let us know. Request for Production No. 82 seeks production of "[a]ll documents and things relating to any current or former employee of AOS." This request fails to meet the requirement in Federal Rule of Civil Procedure 34(b) that each document request be "described with reasonable particularity," instead seeking a wide swath of material relating to certain employees, and is consequently overbroad, unduly burdensome and oppressive, and seeks information that is not relevant to the subject matter of the pending action or claims or defenses of any party, and not reasonably calculated to lead to the discovery of admissible evidence.

With respect to Fairchild's objection on the basis that documents which AOS is seeking in Requests for Production Nos. 76 and 82 are protected by common law, constitutional and/or statutory rights of privacy, personnel files contain highly personal and sensitive information that falls within the scope of individual employees' rights of privacy, and Fairchild, therefore, has an interest, and even an obligation, to protect against their unnecessary disclosure in discovery. *Cook v. Yellow Freight System, Inc.*, 132 F.R.D. 548, 551 n.2 (E.D. Cal. 1990); *see Megargee v. Wittman*, 2007 WL 2462097, \*2 (Slip copy) (E.D. Cal., Aug. 27, 2007). The need for discovery must be balanced against the individual's right of privacy - any invasion to the employee's right of privacy must be drawn with narrow specificity. *Cook*, 132 F.R.D. 548 at 552; *Megargee*, 2007 WL 2462097, \*2. AOS's requests are not narrowly drawn to seek only relevant information, instead seeking the entire contents of personnel files. Please provide the relevance of the requested documents.

Finally, with respect to AOS's Requests for Production Nos. 92, 112 and 113, Fairchild's objections are appropriate and proper. With respect to Fairchild's objection on the basis of privilege, Fairchild's investigation is ongoing, but Fairchild believes certain materials may be protected by the attorney-client privilege and/or the work-product doctrine. Fairchild is not yet required to provide a privilege log with the items you have listed. A privilege log containing appropriate information will be provided at an appropriate time. AOS's Request for Production No. 92 seeks production of "[a]ll documents constituting or reflecting searches, investigations, or evaluations of domestic or foreign patents, literature, or other published materials relating to any invention disclosed, described, or claimed in any of the Fairchild Asserted Patents." To the extent these documents are not protected by the attorney-client privilege and/or the work-product doctrine, this request is vague and ambiguous, overbroad, unduly burdensome and oppressive, and seeking information that is not relevant to the subject matter of the pending action or claims or defenses of any party, and not reasonably calculated to lead to the discovery of admissible evidence. AOS's Request for Production No. 112 seeks a "fully functional sample of each commercial embodiment of each and every Fairchild Asserted Patent." Fairchild in its Disclosure of Asserted Claims and Preliminary Infringement Contentions has identified hundreds

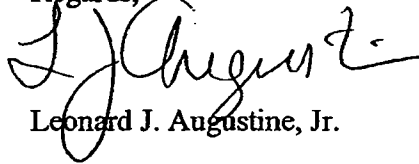
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of Fairchild products which embody the inventions in its asserted patents. For Fairchild to respond to discovery requests seeking samples of such a large number of its products when a limited number of representative products can be selected which provide all relevant information is overbroad, unduly burdensome and oppressive. AOS's Request for Production No. 113 seeks "[a]ll documents and things constituting, evidencing or relating to any product that competes with any commercial embodiment." The phrase "any product that competes with any commercial embodiment" is unintelligible.

I am available to discuss these issues with you. Please let me know your availability.

Regards,



Leonard J. Augustine, Jr.

LJA/lja

61173724 v2



# **Exhibit 24**

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November 2, 2007

***VIA ELECTRONIC MAIL AND U.S. MAIL***

Harry F. Doscher  
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(415) 442-1024

Re: Alpha & Omega Semiconductor, Ltd. v. Fairchild Semiconductor Corp.,  
Case No. C 07-2638 JSW (consolidated with Case No. C-07-2664 JSW)  
Our File No.: 18865P-021600

Dear Harry:

I am writing this letter in response to your October 24, 2007 letter to Leonard Augustine regarding Fairchild's discovery responses.

We believe that we have provided sufficient information in each of our interrogatory responses. For example, contrary to the assertion in your letter, Fairchild properly identified by production number, pursuant to Federal Rule of Civil Procedure ("Rule") 33(d), recipes that refer to FDS4435BZ and FDS6675BZ (*See eg.* Production Nos. FAIR0008505-0009842). However, in the spirit of cooperation, Fairchild will supplement Interrogatory Nos. 2-4 by specifying which documents correspond to which accused device (limited to the eight accused devices which are listed in Fairchild's response to Interrogatory No. 1) by November 16, 2007. Additionally, Fairchild will supplement Interrogatory Nos. 8, 13 and 17 by November 16, 2007 by identifying either particular documents pursuant to Rule 33(d) or additional information in its responses.

Fairchild stands by its objections to Interrogatory No. 6. AOS has served supplemental PICs that still fail to comply with the Patent Local Rules. Therefore, Fairchild does not have proper notice of AOS's infringement contentions and cannot possibly articulate a proper response to Interrogatory No. 6 at this time. Additionally, since Fairchild's non-infringement position is predicated on its claim construction position, it is premature to seek Fairchild's non-infringement position until the parties have exchanged their claim construction.

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It appears that Fairchild and AOS have reached an impasse on each party's definition of "accused devices." The supplemental PICs served by AOS do not provide any support for its broad definition of "accused devices." Additionally, AOS's definition of "Accused Fairchild Products" in its discovery requests purports to cover a vast and indiscriminate array of Fairchild's products. By comparison, Fairchild's PICs have provided 56 claim charts applying to 14 different AOS products, and included an explanation as to why the claim charts for those products apply to the AOS products accused of infringement. Fairchild has also properly limited its definition of "accused devices" to AOS's systems and products that contain "trench design power MOSFETs or IGBTs." Fairchild still proposes (as it has proposed on numerous occasions) that the parties agree on a list of representative parts for discovery and trial to streamline the process and reduce the cost and burden on both parties.

On a similar note, with respect to AOS's Document Request No. 11, Fairchild will not agree to produce fully functional samples of the "Accused Fairchild Devices," as AOS has broadly defined them, at this time. This is simply an unduly burdensome request and is exorbitantly expensive for Fairchild. The parties can discuss an exchange of samples of accused devices as part of a general agreement regarding identification and production of representative parts.

Fairchild stands by its objections to Document Request No. 4, particularly that the request is overbroad, unduly burdensome and oppressive to the extent that it requests information regarding "all documents and things relating to AOS asserted patents." Documents regarding AOS's asserted patents are equally available to AOS. However, to the extent that responsive documents exist relating to the particular documents listed in the request, specifically: expired patents, continuations, continuations in-part, divisionals, reissues, reexaminations and any related foreign patents and patent applications relating to AOS's asserted patents, Fairchild will search for and produce non-privileged documents within its possession, custody or control that can be located after a reasonable search. To the extent that AOS's request for "all documents and things relating to AOS asserted patents" covers documents other than those listed above, please describe those other types of documents.

Document Request No. 5 is improper because it requests Fairchild's non-infringement position (and analyses and studies regarding non-infringement of the AOS patents) when, as stated with reference to Interrogatory No. 6, AOS has still failed to serve Fairchild with PICs that comply with the Patent Local Rules and clearly set out its infringement contentions. Therefore, Fairchild stands by its objections to Document Request No. 5.

Fairchild appropriately objected to Document Request No. 45. However, Fairchild will produce non-privileged documents within its possession, custody or control that could be located after a reasonable search that show specifications, design parameters, tolerances, features and price relating to customers. To the extent that AOS's request for "all documents relating to any requirements of your customers" covers documents other than those listed above, please describe those other types of documents.

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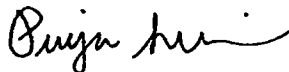
With regard to Document Request Nos. 76 and 82, Fairchild's objections are also appropriate. Your October 24th letter still does not adequately explain *how* highly personal and confidential but largely irrelevant information contained in the personnel files is relevant to a patent infringement lawsuit, especially since information relating to "*inter alia*, Fairchild's knowledge of AOS's patents and technology and the contribution of people with such knowledge to the design, development and manufacture of Fairchild's products" including work files of Fairchild employees, is being produced in response to other AOS requests. The case that you cite in your letter, *Cook v. Yellow Freight System, Inc.*, 132 F.R.D. 548 (E.D. Cal. 1990) is a sexual harassment case brought on by former employees in an employment lawsuit. In *Cook*, the names and addresses of employees were directly relevant to the sexual harassment claim. It is still unclear how Fairchild personnel files are relevant to a patent infringement case. Moreover, even in *Cook*, the court required the party requesting the names and addresses to draft a letter, approved by the court, requesting the former employees' consent. The *Cook* court also limited the discovery only to the names and addresses of the employees *and* required the requesting party to obtain each employee's consent to participate in the lawsuit. The court finally stated that the discovery of their *files* is subject to individual consent of each the employees. Here, AOS has done nothing but propound discovery requests demanding the personnel files of Fairchild employees. AOS has a much heavier burden to meet in order to obtain highly personal and confidential personnel files of Fairchild employees. AOS has not met that burden.

Fairchild's objections to Document Request No. 92 are also appropriate. However, to the extent that any non-privileged documents exist, Fairchild will produce documents within its possession, custody or control that could be located after a reasonable search that constitute or reflect searches, investigations, or evaluations of domestic or foreign patents, literature or other published materials relating to any invention claimed in any of the Fairchild Asserted Patents.

With respect to Document Request No. 112, Fairchild's objections are proper. In its PICs, Fairchild has clearly listed all of the parts that embody the claims of the Fairchild asserted patents. AOS can easily obtain the information responsive to this request by purchasing any of the listed parts. Fairchild stands by its objections.

I am generally available next week to discuss any of these issues with you.

Very truly yours,



Priya Sreenivasan

P2S/ks  
61194540 v1

# **Exhibit 25**

AOS v. FAIRCHILD.txt

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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

BEFORE THE HONORABLE ELIZABETH D. LAPORTE

ALPHA & OMEGA SEMICONDUCTOR, INC. )  
A CALIFORNIA CORPORATION; AND )  
ALPHA & OMEGA SEMICONDUCTOR, LTD., )  
A BERMUDA CORPORATION, )

PLAINTIFFS,

VS.

FAIRCHILD SEMICONDUCTOR, CORP., A )  
DELAWARE CORPORATION, )

DEFENDANTS.

NO. C 07-2638 JSW (EDL)

SAN FRANCISCO, CALIFORNIA  
TUESDAY  
NOVEMBER 27, 2007

AND RELATED COUNTERCLAIMS.

TRANSCRIPT OF PROCEEDINGS

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SAN FRANCISCO, CALIFORNIA 94111  
BY: IGOR SHOIKET, ESQUIRE  
ERIC P. JACOBS, ESQUIRE

REPORTED BY: JOAN MARIE COLUMBINI, CSR 5435, RPR  
OFFICIAL COURT REPORTER, U.S. DISTRICT COURT

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PROCEEDINGS; TUESDAY, NOVEMBER 27, 2007

THE CLERK: CALLING CIVIL 07-2638, ALPHA AND OMEGA  
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AOS v. FAIRCHILD.txt

16 MR. SHOIKET: IT DOES NOT, YOUR HONOR. WE HAVE  
17 TESTED -- WE BELIEVE WE'VE TESTED SUFFICIENT NUMBER OF DEVICES  
18 AND PROVIDED PICS THAT, NOT PERHAPS THE SIZE OF THE NEW YORK  
19 BOOK, BUT CERTAINLY THE SIZE OF A SAN FRANCISCO PHONE BOOK. BY  
20 THE WAY, THESE ARE THEIR PICS, YOUR HONOR.

21 THE COURT: IF THEIR PICS ARE EVEN WORSE THAN YOURS,  
22 THAT DOESN'T MEAN YOURS ARE NECESSARILY OKAY.

23 MR. SHOIKET: BY THE WAY, THIS ANALYSIS WAS DONE BY  
24 AN INDEPENDENT LAB, YOUR HONOR. THIS WAS NOT DONE BY  
25 FAIRCHILD.  
□

18

1 THE COURT: LET ME SAY THIS: I THINK THAT THERE IS  
2 REALLY REGRETTABLE AND LAMENTABLE POSTURING AND GAMESMANSHIP  
3 GOING ON, AS IS NOT, UNFORTUNATELY, UNCOMMON IN THESE CASES,  
4 YOU KNOW, AND FIGHTING OVER EVERY ISSUE THAT YOU CAN IN THE  
5 LOCAL RULES IN ORDER NOT TO GET DOWN TO SUBSTANTIVELY WHAT IS  
6 RELEVANT AND WHAT ISN'T AND BEING CANDID WITH EACH OTHER. I  
7 THINK THAT IN THIS CASE THAT MOSTLY IS THE POSTURING OF THE  
8 DEFENDANTS, AT THIS MOMENT, BUT I NOTE YOU HAVE THREE MORE  
9 MOTIONS COMING UP, AND I EXPECT THAT WE'LL SEE SIMILAR BEHAVIOR  
10 GOING ON UNLESS I TRY TO PUT A STOP TO IT TODAY, WHICH IS WHAT  
11 I WANT TO DO.

12 I THINK THAT DEFENDANTS -- I THINK THAT THE  
13 DEFENDANTS HAVE DONE A GREAT DEAL OF DISCLOSURE AND A PRETTY  
14 GOOD JOB. WHETHER THERE ARE A FEW ADDITIONAL ISSUES THAT OUGHT  
15 TO BE FLESHED OUT MORE, THERE MAY BE.

16 I THINK YOU DID NOT ANSWER MY QUESTION, REALLY,  
17 REGARDING -- I READ THE DECLARATION. HE SAYS THERE ARE  
18 DIFFERENCES, BUT HE DOESN'T SAY IN WHAT WAY THEY'RE MATERIAL.  
19 HE, OF COURSE, HAS THE ADVANTAGE OF KNOWING HIS OWN PRODUCT  
20 LINE. THE OTHER SIDE HAS CERTAINLY GONE WAY BEYOND THE RULE 11

AOS v. FAIRCHILD.txt

21 THRESHOLD. WHETHER THE CASE IS ONE THAT CAN REALLY ULTIMATELY  
22 BE FOUGHT OVER 342 PRODUCTS, YOU KNOW, IS QUESTIONABLE JUST IN  
23 TERMS OF THE PRACTICALITIES OF IT, BUT I THINK IT'S TOO EARLY A  
24 STAGE TO SAY THAT -- TO JUST ELIMINATE THAT POSSIBILITY.

25 THEY HAVE DONE A LOT MORE THAN OTHERS IN PUTTING  
□

19

1 FORWARD AN EXPERT DECLARATION, AND EXPERTS ARE ENTITLED TO  
2 BE -- IT'S NOT MERELY CONCLUSORY. I WOULD SAY IT GOES BEYOND  
3 THAT. IT DOESN'T ADDRESS EVERY SINGLE ISSUE.

4 IF YOU HAVE GENUINE DISPUTES THAT THERE ARE CERTAIN  
5 PRODUCTS THAT ARE REALLY TRULY DIFFERENT, I THINK YOU SHOULD  
6 PROVIDE MORE ANALYSIS OF WHY AND ASK THEM TO PROVIDE MORE, BUT  
7 I'M NOT GOING TO PREVENT THEM, THEREFORE, FROM GETTING SOME  
8 BASIC DISCOVERY WHICH ALLOW THEM TO TEST WHETHER THAT'S RIGHT  
9 OR WRONG. INSTEAD, I THINK YOU ARE TAKING SORT OF A  
10 FORMULISTIC POSITION ON THE PICS TO PREVENT -- AND YOU HAVEN'T  
11 PROVIDED A DECLARATION THAT CONVINCES ME THAT THEY MAY NOT BE  
12 RIGHT. THEY HAVE A BASIS FOR IT.

13 IT SEEMS TO ME, IN GENERAL, THE MOTION IS NOT WELL  
14 TAKEN, AND WHETHER THERE ARE SOME PARTICULAR ADDITIONAL LIMITED  
15 THINGS, YOU HAVEN'T IDENTIFIED THEM. SO EITHER I DENY IT IN  
16 ITS ENTIRETY, OR YOU COME UP WITH SOME SPECIFICS THAT MAKE  
17 SENSE AND ARE REASONABLE THAT YOU REALLY TRULY NEED.

18 BUT, IN GENERAL, I THINK THEY'VE DONE A SUFFICIENT  
19 JOB TO GET TO THE NEXT STAGE. NOW, HOW MUCH DISCOVERY THEY  
20 GET, GIVEN BOTH THE FACT THAT THERE MAY BE ISSUES AS TO WHETHER  
21 THE PRODUCTS ARE REPRESENTATIVE, THAT REQUIRES KNOWLEDGE, MORE  
22 DETAILED KNOWLEDGE, ABOUT THE PRODUCTS, AND NOT JUST THEY HAVE  
23 THESE DIFFERENT FEATURES, BUT HOW DO THOSE FEATURES MATTER TO  
24 THE PATENT.

25 I WOULD NOT USE THE PRACTICAL QUESTION, IS, DO THEY  
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20

1 GET TO GET SOME DISCOVERY ON THAT. I WOULD SAY YES. BUT DO  
2 THEY GET WHOLESALE DISCOVERY OR ENOUGH LIMITED DISCOVERY TO  
3 START NARROWING THE CASE, IF IT SHOULD BE NARROWED, THAT'S WHAT  
4 I THINK OUGHT TO HAPPEN.

5 MR. SCHUMAN: THAT'S A SEPARATE QUESTION, A SEPARATE  
6 MOTION.

7 THE COURT: BUT WE KNOW THAT'S THE REAL POINT OF ALL  
8 THIS.

9 MR. SCHUMAN: BUT THE POINT HERE --

10 THE COURT: THAT'S THE REAL PRACTICAL ISSUE.

11 MR. SCHUMAN: THIS IS IN LIEU OF WHO'S GETTING  
12 DISCOVERY OF WHOM. THE RULE 31 DISCLOSURES ARE A DISCOVERY  
13 DEVICE FOR US TO GET INFORMATION FROM THEM.

14 THE COURT: YES. AND I THINK, BY AND LARGE, YOU'VE  
15 GOTTEN 90 TO A HUNDRED PERCENT OF WHAT YOU NEED. NOW, IF  
16 THERE'S A TEN PERCENT YOU NEED, YOU HAVEN'T IDENTIFIED IT, SO I  
17 CAN'T ORDER IT.

18 MR. SCHUMAN: WELL --

19 THE COURT: I DON'T KNOW WHAT IT IS. NO, I'M NOT  
20 STOPPING THEM IN THEIR TRACKS. THEY'VE GIVEN YOU REALLY A  
21 GREAT DEAL.

22 MR. SHOIKET: MAY I ADDRESS THE DISCOVERY ISSUE,  
23 YOUR HONOR?

24 WE HAVE REPEATEDLY OFFERED TO THEM TO AGREE ON  
25 REPRESENTATIVE SAMPLES SO THAT THE PARTIES DO NOT NEED TO TAKE

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21

1 DISCOVERY ON THE ENTIRE PRODUCT LINE. THEY HAVE ACCUSED OUR  
2 ENTIRE PRODUCT LINE AS WELL. SO FAR THEY HAVE NOT AGREED TO DO  
3 THAT. SO, YOUR HONOR, THAT WOULD BE CORRECT; THAT WOULD BE A

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4 PRACTICAL WAY TO PROCEED.

5 THE COURT: RIGHT. I WOULD LIKE YOU TO TAKE A LOOK,  
6 FOR EXAMPLE -- I MEAN, THIS IS NOT NECESSARILY A PRECISE MODEL  
7 BY ANY MEANS, BUT IF THE TESSERA VERSUS ADVANCED MICRO DEVICES  
8 CASE, 05-4063, I HAVE AN ORDER OF JUNE 23RD, 2006, AND I THINK  
9 THIS WAS AFTER ORDERING THE PARTIES TO MEET AND CONFER WITH  
10 SOME GUIDANCE AND SUPERVISION ON MY PART, IN WHICH THERE WAS  
11 SOME AGREEMENT -- THERE MAY BE OTHER ORDERS, TOO, ABOUT PRODUCT  
12 FAMILIES IN WHICH THERE WERE REPRESENTATIVE -- IT WAS DECIDED  
13 FOR EACH PRODUCT FAMILY, THERE WOULD BE MANUFACTURING PROCESS  
14 DOCUMENTS AND MATERIALS SPECIFICATIONS COMMON TO THAT FAMILY,  
15 ONE SET OF DESIGN AND TECHNICAL SPECIFICATION DOCUMENTS FOR ONE  
16 EXEMPLARY MODEL NUMBER THAT MEETS ALL THE REQUIREMENTS OF THE  
17 LOCAL RULES OF THAT MODEL NUMBER, ET CETERA, ET CETERA.

18 IN OTHER WORDS, THAT WAS THE KIND OF APPROACH THAT  
19 WAS TAKEN. THAT'S NOT TO SAY THAT'S THE PRECISE APPROACH THAT  
20 OUGHT TO BE TAKEN, BUT SOMETHING OF THAT NATURE, I THINK, OUGHT  
21 TO BE DONE. THERE OUGHT TO BE, YOU KNOW, THE MOST IMPORTANT  
22 SORT OF REPRESENTATIVE DISCOVERY INITIALLY.

23 NOW, IT MAY WELL BE -- I THINK THAT THERE COULD BE  
24 SOME REAL HOLES IN YOUR PICS. I DON'T KNOW. I WOULD WANT YOU  
25 TO BE -- IF THEY CAN IDENTIFY SOMETHING IN PARTICULAR THAT YOU  
□

22

1 OUGHT TO FOLLOW UP ON -- I DON'T KNOW WHAT YOUR EXPERT'S  
2 RESPONSE WAS TO THEIR EXPERT -- YOU KNOW, YOU SHOULD BE WILLING  
3 PERHAPS WITH -- PERHAPS ON A SHOWING OF SOME DESIGN DOCUMENTS  
4 OR OTHER DOCUMENTS THAT BACK IT UP, TO WITHDRAW THOSE PRODUCTS  
5 FROM THE CASE.

6 I MEAN, YOU KNOW, I DON'T THINK THAT AT THIS POINT,  
7 THOUGH, YOU KNOW, THE COURT SHOULD BE TRYING TO DECIDE THE  
8 MERITS OF THE CASE, YOU KNOW, BY FORESTALLING DEVELOPMENT OF

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9 THE CASE. IT'S A CHICKEN AND EGG ISSUE, BUT I DON'T THINK -- I  
10 THINK THEY'VE DONE ENOUGH TO GO FORWARD. IF YOU HAVE VERY  
11 SPECIFIC AREAS WHERE YOU THINK THEY ARE REALLY COMPLETELY --  
12 IT'S NOT A QUESTION OF, YOU KNOW, THERE'S SOME DISPUTE OVER THE  
13 MERITS, YOU DON'T AGREE WITH THEIR POSITION, BUT AT LEAST THEY  
14 HAVE AN ARGUABLE POSITION, BUT YOU THINK THERE ARE ONES THAT  
15 ARE COMPLETELY, UTTERLY A DRY HOLE; IF THEY ONLY UNDERSTOOD THE  
16 PRODUCT, THEY WOULD KNOW IT'S NOT LIKE IN THE RELEVANT RESPECTS  
17 AND IT IS A WASTE OF TIME AND MONEY TO PURSUE IT, YOU OUGHT TO  
18 CONVINCE THEM OF THAT WITH SOME SHOWING. I DON'T WANT IT TO  
19 BECOME PURELY A FORMULISTIC EXERCISE OVER THESE PICS.

20 SO ONE MORE CHANCE. IF THERE'S SOMETHING VERY  
21 PARTICULAR YOU WANT THEM TO DO WITH RESPECT TO THE PICS, AND I  
22 RAISE SOME SPECIFIC ISSUES --

23 MR. SCHUMAN: I THINK I DIDN'T HEAR -- ACTUALLY, I  
24 HEARD SOME CONCESSIONS AND NOT A DEFENSE. I MEAN, YOU RAISE  
25 ONE OF OUR ISSUES IN OUR PAPERS, IS THREE OF THEM ARE NOT EVEN  
□

23

1 THE RIGHT PRODUCTS, AND THE CONCESSION WAS, MAYBE WE HAVE  
2 SUFFICIENT PICS FOR ONLY 11; THAT'S A SMALLER REPRESENTATIVE  
3 SAMPLE.

4 THE COURT: THAT'S NOT WHAT HE SAID. HE SAID MAYBE  
5 OUR REPRESENTATIVE SAMPLE IS 11, NOT 14, BUT HE STILL THINKS  
6 THEY'RE REPRESENTATIVE.

7 MR. SCHUMAN: WELL, THE FUNDAMENTAL PROBLEM HERE  
8 IS -- AND TO BE CLEAR, WE HAVE NEVER REJECTED A REQUEST FOR AN  
9 AGREEMENT ABOUT A REPRESENTATIVE SAMPLE OF THE PARTS. THE  
10 PROBLEM IS HOW TO FIGURE OUT WHAT THOSE REPRESENTATIVE PARTS  
11 ARE, AND WHERE WE ARE HERE RIGHT NOW WITH THE PICS IS WE HAVE  
12 BEEN TOLD BY THEM THAT THEY THINK 14 ARE -- THIS IS THEIR VIEW  
13 OF WHAT HAPPENS, WHAT'S REPRESENTATIVE, AND I THINK WE HAVE

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14 DONE ENOUGH, AND I APPRECIATE YOUR HONOR DISAGREES, IN OUR  
15 VIEW, FROM MR. HEBERT'S DECLARATION, THE VIEW IS THAT THESE ARE  
16 NOT REPRESENTATIVE PARTS. SO WE HAVE TO UNDERSTAND MORE ABOUT  
17 THEIR POSITION AND THEY, FOR THE OTHER SIDE OF THE CASE, NEED  
18 TO UNDERSTAND MORE ABOUT OURS BEFORE THAT KIND OF AGREEMENT CAN  
19 BE REACHED.

20 THE COURT: WELL, I WOULD LIKE TO NOT HAVE TO HEAR  
21 THE NEXT THREE MOTIONS, ABSENT SOME FURTHER MEET AND CONFER  
22 BETWEEN YOU. AND WHAT ABOUT, YOU KNOW, HAVING YOUR EXPERTS  
23 TALK TO EACH OTHER? ARE THEY GOING TO BE TESTIFYING EXPERTS,  
24 OR ARE THESE PEOPLE YOU COULD ACTUALLY HAVE HAVE SOME  
25 DISCUSSION, TRY TO NARROW THE ISSUES?

□

24

1 MR. SCHUMAN: ONE OF THE MOTIONS ON THE COURT'S  
2 CALENDAR, YOUR HONOR, IS OUR MOTION FOR PROTECTIVE ORDER TO  
3 PRECLUDE DR. BLANCHARD FROM EVEN BEING IN THIS CASE.

4 THE COURT: WELL --

5 MR. SCHUMAN: BECAUSE DR. BLANCHARD IS A COMPETITOR  
6 OF AOS, AS HE SAYS IN HIS DECLARATION, HAS 120 PATENTS. SO WE  
7 CAN'T TALK WITH DR. BLANCHARD UNTIL WE'VE RESOLVED THAT, AND  
8 THAT MOTION IS, I THINK, ON FOR DECEMBER 18TH. I'M NOT SURE  
9 IT'S EVEN FULLY BRIEFED.

10 THE COURT: MAYBE THAT MOTION HAS TO GO FORWARD,  
11 BUT, YOU KNOW, THE MOTION TO COMPEL AND THE MOTION ABOUT YOUR  
12 PICS BEING INADEQUATE, ISN'T THAT SOMETHING YOU COULD DO A  
13 BETTER JOB ON?

14 MR. SCHUMAN: BOTH SIDES HAVE MOTIONS TO COMPEL,  
15 YOUR HONOR, AND THE REMAINING MOTION ABOUT THE PICS IS, I  
16 THINK, A QUESTION PROPERLY ADDRESSED OVER THERE.

17 MR. SHOIKET: YOUR HONOR, THE BEST --

18 THE COURT: I MEAN, THIS IS REALLY, YOU KNOW --



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19 SHOULD I BE HEARING FOUR MOTIONS IN A MONTH FROM ONE CASE?

20 MR. SHOIKET: PROBABLY NOT, YOUR HONOR, BUT THAT'S  
21 WHERE WE ARE, UNFORTUNATELY.

22 AS TO DR. BLANCHARD, BY THE WAY, AOS TRIED TO HIRE  
23 HIM THEMSELVES AND BROUGHT THEIR MOTION AFTER THEY WEREN'T  
24 SUCCESSFUL, SO ...

25 AS TO YOUR HONOR'S SUGGESTION ABOUT AN AGREEMENT OF

25

1 NON-REPRESENTATIVE PARTS, WE HAVE REPEATEDLY ASKED THEM, EVEN  
2 BEFORE WE FILED THE LAWSUIT, GIVE US YOUR PRODUCT RECIPE AND  
3 SPECS. THAT IS THE BEST EVIDENCE THAT WOULD SHOW WHETHER THEY  
4 FORM A DEEP WELL INSIDE THE BODY OR NOT, AND THEY HAVE  
5 CONSISTENTLY REFUSED.

6 WE ASKED BEFORE THE LAWSUIT WAS FILED, AND WE SAID,  
7 IF YOU CONTINUE TO INFRINGE, GIVE US YOUR PROCESS FLOWS, AND  
8 WE'LL GO AWAY IF IT IS TRUE. WE'VE REPEATED THE REQUEST  
9 REPEATEDLY THROUGHOUT DISCOVERY. WHEN WE SEE THEIR PROCESS  
10 SPECS AND THE PROCESS FLOWS, IT WILL BE MUCH EASIER TO  
11 DETERMINE WHICH OF THEIR PRODUCTS INFRINGE --

12 THE COURT: IN GENERAL --

13 MR. SHOIKET: -- THROUGH REVERSE ENGINEERING.

14 THE COURT: -- I AM IN FAVOR OF SOME OF THAT. I  
15 DON'T KNOW TO WHAT DEGREE. I DON'T KNOW THE CONFIDENTIALITY  
16 AND SECRECY ISSUES OBVIOUSLY HAVE TO BE SATISFIED, BUT, IN  
17 GENERAL, I THINK THAT'S A REASONABLE APPROACH.

18 MR. SCHUMAN: DISCOVERY, YOUR HONOR, SO YOU ARE  
19 AWARE, IS PROCEEDING. EACH SIDE HAS PRODUCED THOUSANDS OF  
20 PAGES OF DOCUMENTS. WE ARE NOT SEEKING TO STOP THIS CASE IN  
21 ITS TRACKS. WE HAVE PRODUCED SOME OF THE DOCUMENTS THAT SHOW  
22 HOW OUR PRODUCTS ARE MADE. THEY HAVE PRODUCED SOME, BUT NOT  
23 ALL. SO THAT'S WHERE WE WERE IN TERMS OF THESE OTHER MOTIONS.

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24 BUT DISCOVERY IS ONGOING. DOCUMENT PRODUCTION IS  
25 ONGOING ON A ROLLING BASIS.  
□

26

1 THE COURT: I'M SAYING I'M NOT SATISFIED WITH THE  
2 WAY IT IS BEING CONDUCTED BASED ON THIS MOTION AND LOOKING --  
3 NOT LOOKING AT BUT UNDERSTANDING JUST WHAT'S AT ISSUE IN THE  
4 NEXT THREE MOTIONS. NOW, THE EXPERT ISSUE, MAYBE THAT'S ONE  
5 I'M GOING TO HAVE TO RESOLVE. BUT -- ALTHOUGH I THOUGHT ONE OF  
6 THE ISSUES IS THEY'RE SAYING YOU HAVEN'T DISCLOSED FULLY WHAT  
7 ELSE IS HE INVOLVED IN. IS THE BASIS HIS OWN PATENTS OR  
8 WHAT -- WHO ELSE HE'S CONSULTING FOR?

9 MR. SCHUMAN: IT'S BOTH WHAT HE IS NOT DISCLOSING,  
10 BECAUSE WE DON'T KNOW THE FULL RANGE OF WHAT HE'S DOING. AND,  
11 ALSO, FROM WHAT WE DO KNOW, WE THINK HE SHOULD NOT HAVE ACCESS  
12 TO AOS'S CONFIDENTIAL OR HIGHLY CONFIDENTIAL INFORMATION  
13 BECAUSE HE'S AN INVENTOR, A PATENTOR, HE WORKS FOR OUR  
14 COMPETITORS, AND HE WORKS FOR HIMSELF.

15 THE COURT: THAT I MAY HAVE TO GET INTO. BUT TO THE  
16 EXTENT -- AGAIN, JUST AS A PRELIMINARY MATTER, UNLESS THERE'S  
17 SOME GOOD REASON NOT TO, I THINK YOU OUGHT TO DISCLOSE RIGHT  
18 AWAY EVERYTHING HE'S INVOLVED IN THAT MIGHT POSSIBLY BE  
19 RELEVANT.

20 MR. SHOIKET: MAY I ADDRESS THE ISSUE, YOUR HONOR?

21 THE COURT: BRIEFLY.

22 MR. SHOIKET: I MEAN, I BELIEVE WE'VE DISCLOSED ALL  
23 OF HIS PRESENT CONSULTING ENGAGEMENTS. WHAT IS INCREDIBLY  
24 BURDENSOME TO US IS DISCLOSING ALL OF HIS CONSULTING  
25 ENGAGEMENTS IN THE PAST, ESPECIALLY SINCE HE HAS  
□

27

1 CONFIDENTIALITY AGREEMENTS WITH HIS CLIENTS. A LOT OF HIS  
2 ENGAGEMENTS ARE NOT IN THIS AREA OF MOSFETS. HE DOES  
Page 22

**Exhibit 26**  
**Highly Confidential -**  
**Attorneys' Eyes Only**  
**(Filed Under Seal)**

**Exhibit 27**  
**Highly Confidential -**  
**Attorneys' Eyes Only**  
**(Filed Under Seal)**

# **Exhibit 28**



**ALPHA & OMEGA**  
SEMICONDUCTOR



**AO4410**

## N-Channel Enhancement Mode Field Effect Transistor

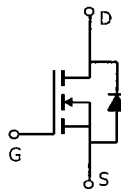
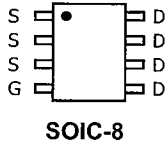
### General Description

The AO4410 uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , shoot-through immunity, body diode characteristics and ultra-low gate resistance. This device is ideally suited for use as a low side switch in Notebook CPU core power conversion. *Standard product AO4410 is Pb-free (meets ROHS & Sony 259 specifications).*

### Features

$V_{DS}$  (V) = 30V  
 $I_D$  = 18A ( $V_{GS}$  = 10V)  
 $R_{DS(ON)} < 5.5m\Omega$  ( $V_{GS}$  = 10V)  
 $R_{DS(ON)} < 6.2m\Omega$  ( $V_{GS}$  = 4.5V)

**UIS TESTED!**  
**Rg, Ciss, Coss, Crss Tested**



### Absolute Maximum Ratings $T_A=25^\circ\text{C}$ unless otherwise noted

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current <sup>AF</sup>	$I_D$	18	A
$T_A=25^\circ\text{C}$			
$T_A=70^\circ\text{C}$		15	
Pulsed Drain Current <sup>B</sup>	$I_{DM}$	80	
Power Dissipation	$P_D$	3	W
$T_A=25^\circ\text{C}$			
$T_A=70^\circ\text{C}$		2.1	
Avalanche Current <sup>B</sup>	$I_{AR}$	30	A
Repetitive avalanche energy 0.3mH <sup>B</sup>	$E_{AR}$	135	mJ
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ\text{C}$

### Thermal Characteristics

Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient <sup>A</sup>	$t \leq 10s$	$R_{\theta JA}$	31	40	$^\circ\text{C/W}$
Maximum Junction-to-Ambient <sup>A</sup>	Steady-State		59	75	$^\circ\text{C/W}$
Maximum Junction-to-Lead <sup>C</sup>	Steady-State	$R_{\theta JL}$	16	24	$^\circ\text{C/W}$



AO4410

**Electrical Characteristics ( $T_J=25^{\circ}\text{C}$  unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>STATIC PARAMETERS</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$I_D=250\mu\text{A}$ , $V_{GS}=0\text{V}$	30			V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=30\text{V}$ , $V_{GS}=0\text{V}$ $T_J=55^{\circ}\text{C}$			1 5	$\mu\text{A}$
$I_{GSS}$	Gate-Body leakage current	$V_{DS}=0\text{V}$ , $V_{GS}=\pm 12\text{V}$			100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$	0.8	1.1	1.5	V
$I_{D(ON)}$	On state drain current	$V_{GS}=4.5\text{V}$ , $V_{DS}=5\text{V}$	80			A
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10\text{V}$ , $I_D=18\text{A}$ $T_J=125^{\circ}\text{C}$		4.7 6.4	5.5 7.4	$\text{m}\Omega$
		$V_{GS}=4.5\text{V}$ , $I_D=15\text{A}$		5.2	6.2	$\text{m}\Omega$
$g_{FS}$	Forward Transconductance	$V_{DS}=5\text{V}$ , $I_D=18\text{A}$		102		S
$V_{SD}$	Diode Forward Voltage	$I_S=1\text{A}$ , $V_{GS}=0\text{V}$		0.64	1	V
$I_S$	Maximum Body-Diode Continuous Current				4.5	A
<b>DYNAMIC PARAMETERS</b>						
$C_{iss}$	Input Capacitance	$V_{GS}=0\text{V}$ , $V_{DS}=15\text{V}$ , $f=1\text{MHz}$		9130	10500	pF
$C_{oss}$	Output Capacitance			625		pF
$C_{rss}$	Reverse Transfer Capacitance			387	542	pF
$R_g$	Gate resistance	$V_{GS}=0\text{V}$ , $V_{DS}=0\text{V}$ , $f=1\text{MHz}$	0.2	0.4	0.8	$\Omega$
<b>SWITCHING PARAMETERS</b>						
$Q_g(4.5\text{V})$	Total Gate Charge	$V_{GS}=10\text{V}$ , $V_{DS}=15\text{V}$ , $I_D=18\text{A}$		72.4	85	nC
$Q_{gs}$	Gate Source Charge			13.4		nC
$Q_{gd}$	Gate Drain Charge			16.8		nC
$t_{D(on)}$	Turn-On DelayTime	$V_{GS}=10\text{V}$ , $V_{DS}=15\text{V}$ , $R_L=0.83\Omega$ , $R_{GEN}=3\Omega$		11	15	ns
$t_r$	Turn-On Rise Time			7	11	ns
$t_{D(off)}$	Turn-Off DelayTime			99	135	ns
$t_f$	Turn-Off Fall Time			13	19.5	ns
$t_{rr}$	Body Diode Reverse Recovery Time	$I_F=18\text{A}$ , $dI/dt=100\text{A}/\mu\text{s}$		33	40	ns
$Q_{rr}$	Body Diode Reverse Recovery Charge	$I_F=18\text{A}$ , $dI/dt=100\text{A}/\mu\text{s}$		22.2	30	nC

A: The value of  $R_{\theta JA}$  is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^{\circ}\text{C}$ . The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The  $R_{\theta JA}$  is the sum of the thermal impedance from junction to lead  $R_{\theta JL}$  and lead to ambient.

D: The static characteristics in Figures 1 to 6 are obtained using  $<300\mu\text{s}$  pulses, duty cycle 0.5% max.

E: These tests are performed with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^{\circ}\text{C}$ . The SOA curve provides a single pulse rating.

F: The current rating is based on the  $\leq 10\text{s}$  junction to ambient thermal resistance rating.

Rev5: Jan 2007

THIS PRODUCT HAS BEEN DESIGNED AND QUALIFIED FOR THE CONSUMER MARKET. APPLICATIONS OR USES AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS ARE NOT AUTHORIZED. AOS DOES NOT ASSUME ANY LIABILITY ARISING OUT OF SUCH APPLICATIONS OR USES OF ITS PRODUCTS. AOS RESERVES THE RIGHT TO IMPROVE PRODUCT DESIGN, FUNCTIONS AND RELIABILITY WITHOUT NOTICE.

AO4410

## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

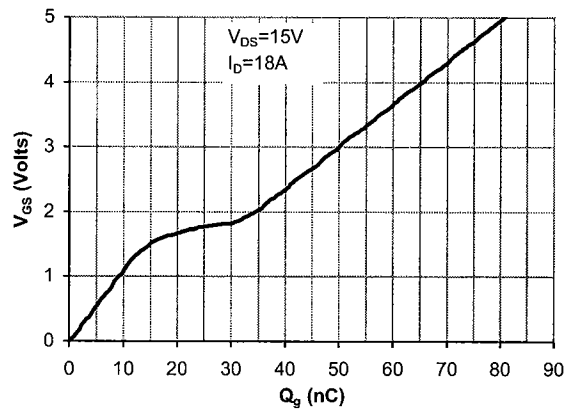


Figure 7: Gate-Charge Characteristics

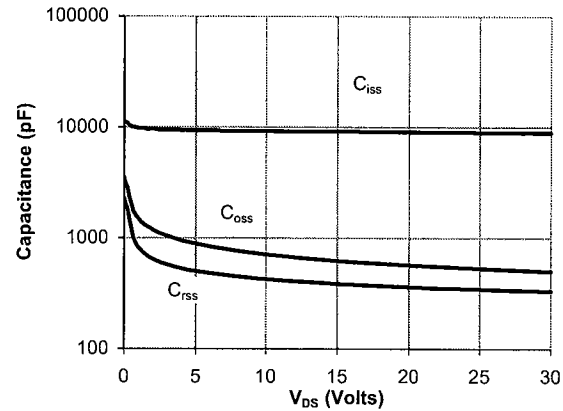


Figure 8: Capacitance Characteristics

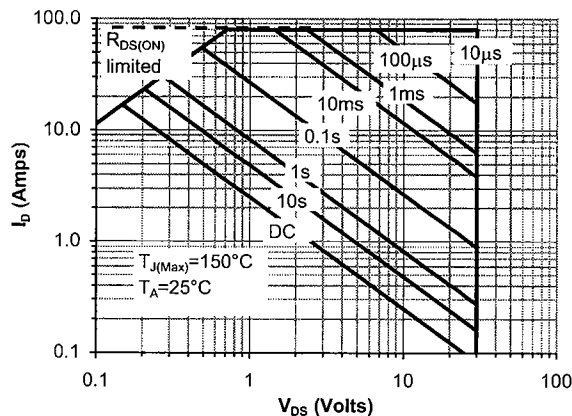


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

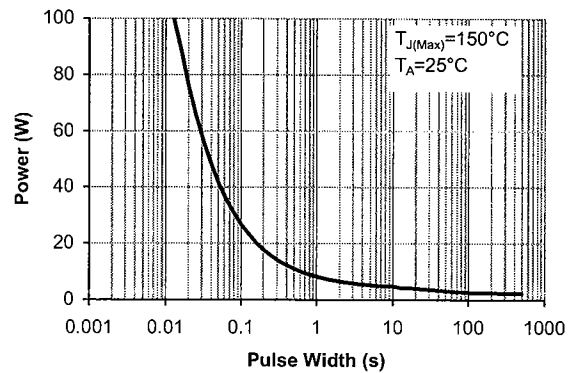


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

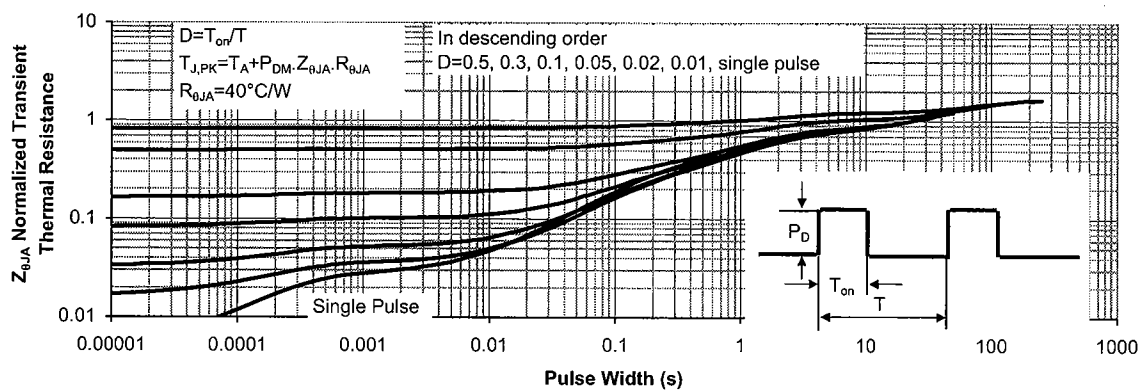


Figure 11: Normalized Maximum Transient Thermal Impedance

AO4410

## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

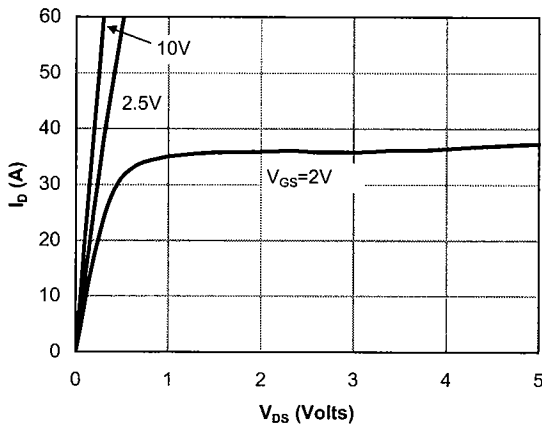


Fig 1: On-Region Characteristics

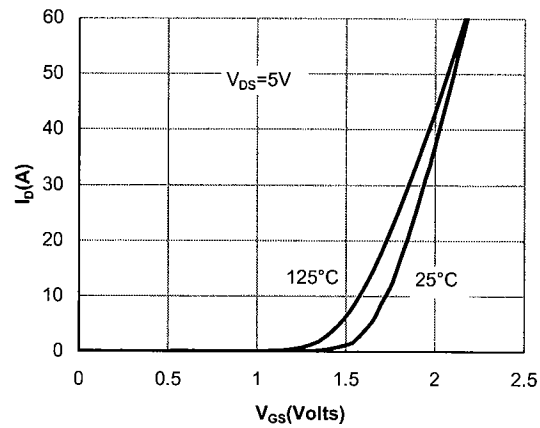


Figure 2: Transfer Characteristics

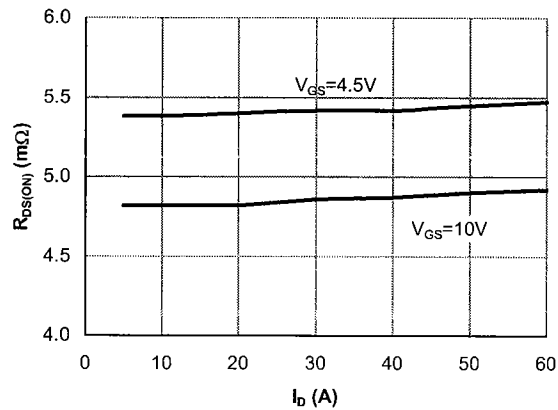


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

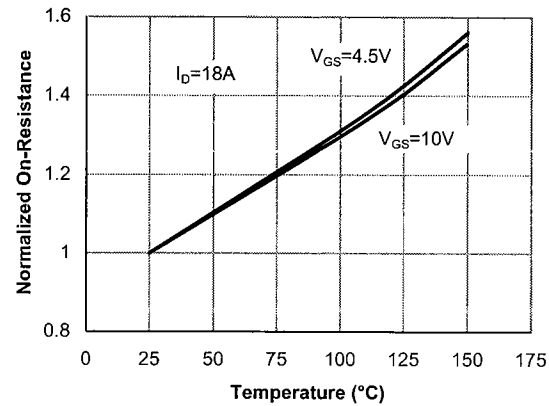


Figure 4: On-Resistance vs. Junction Temperature

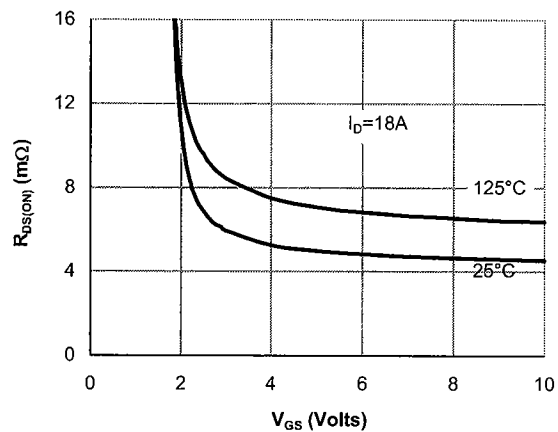


Figure 5: On-Resistance vs. Gate-Source Voltage

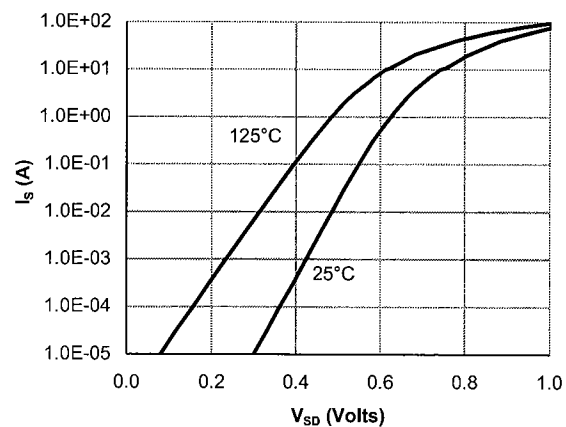


Figure 6: Body-Diode Characteristics